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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/939,310	08/24/2001	Stepan Sokolov	SUN1P839/P6719	2836

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EXAMINER

NAHAR, QAMRUN

ART UNIT	PAPER NUMBER
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2191

DATE MAILED: 06/17/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/939,310

Applicant(s)

SOKOLOV, STEPAN

Examiner

Qamrun Nahar

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 24 November 2004.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,3-8 and 22-35 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,3-8 and 22-35 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 24 November 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>01/10/05</u> | 6) <input type="checkbox"/> Other: _____ |

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DETAILED ACTION

1. This action is in response to the amendment filed on 11/24/04.
2. The objections to the drawings are withdrawn in view of applicant's submission of replacement sheets.
3. The rejection under 35 U.S.C. 101 to claims 1-15 is withdrawn in view of applicant's amendment.
4. The rejection under 35 U.S.C. 112, second and fourth paragraph, is withdrawn in view of applicant's amendment.
5. The rejection under 35 U.S.C. 103(a) as being unpatentable over Cirne (U.S. Patent No. 6,260,187) and further in view of Goss et al. (U.S. Patent No. 4,667,290) to claims 1-3, 9 and 16 is withdrawn in view of new ground(s) of rejection.
6. The rejection under 35 U.S.C. 103(a) as being unpatentable over Cirne (U.S. Patent No. 6,260,187) in view of Goss et al. (U.S. Patent No. 4,667,290), and further in view of Augusteijn et al. (U.S. Patent No. 6,292,883) to claims 4-8 is withdrawn in view of new ground(s) of rejection.
7. The rejection under 35 U.S.C. 103(a) as being unpatentable over Cirne (U.S. Patent No. 6,260,187) in view of Goss et al. (U.S. Patent No. 4,667,290), and further in view of Meyer et al. (Java Virtual Machine) to claims 10-15 and 17-21 is withdrawn in view of new ground(s) of rejection.
8. Claims 1, 3-8 have been amended.
9. Claims 2 and 9-21 have been canceled.
10. Claims 22-35 have been added.

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11. Claims 1, 3-8 and 22-35 are pending.
12. Claims 1, 22 and 29 stand finally objected to because of minor informalities.
13. Claims 1, 3-8 and 22-35 stand finally provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1, 3-8 and 21-34 of copending Application No. 09/939,106 in view of Cirne (U.S. 6,260,187).
14. Claims 1, 3-8 and 22-35 stand finally rejected under 35 U.S.C. 103(a) as being unpatentable over Clausen et al., "Java Bytecode Compression for Low-End Embedded Systems", 2000 (hereinafter Clausen) in view of Cirne (U.S. 6,260,187).

Response to Amendment

Claim Objections

15. Claims 1, 22 and 29 are objected to because of the following informalities: "bytecodes" on lines 16, 15 and 17, respectively, should be "bytecodes". Appropriate correction is required.

Double Patenting

16. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and, *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

17. Claims 1, 3-8 and 22-35 are provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1, 3-8 and 21-34 of copending Application No. 09/939,106 in view of Cirne (U.S. 6,260,187). The following example is given:

As per claim 1 of the instant application, Application '106 discloses (in claim 1):
receiving a first sequence of bytecodes to be executed by said virtual machine; selecting, at load time, a first-reduced instruction from a reduced set of virtual machine instructions, wherein said first-reduced instruction represents two or more different virtual machine instructions in said first sequences; translating, at load time, said two or more different virtual machine instructions in said first sequence into said first-reduced instruction from said reduced set of virtual machine instructions;

generating, after said translating, a second sequence of bytecodes that includes said first-reduced instruction, thereby representing said first sequence of bytecodes with a second sequence which includes at least one instruction from said reduced set of virtual machine instruction that replaces said two or more different virtual machine instructions in said first sequence;

determining, at load time, whether said second sequence of bytecodes includes *a Getfield instruction immediately followed by an Astore instruction*; generating, at load time, a macro instruction that represents *said Getfield instruction and said Astore instruction that immediately follows said Getfield instruction*; loading in said virtual machine prior to execution time, said macro instruction instead of *said Getfield instruction and said Astore instruction*; and executing said macro instruction *to store a value into a local variable*.

The instant application discloses said second sequence of bytecodes includes an instantiation instruction immediately followed by a duplicate stack instruction instead. Cirne teaches that the second sequence of bytecodes includes an instantiation instruction immediately followed by a duplicate stack instruction (“new ... dup” in column 14, lines 31-32), where “new” and “dup” are conventional Java Bytecode instructions which typically appear in sequence in order to instantiate a Java object as pointed out by the applicant in the specification, pg. 13, par. 37. Therefore, it would have been obvious to one having ordinary skill in the computer art at the time of the invention was made to modify the method disclosed by Application ‘106 to include that the second sequence of bytecodes includes an instantiation instruction immediately followed by a duplicate stack instruction using the teaching of Cirne. The modification would be obvious because one of ordinary skill in the art would be motivated to factorize repeated instruction sequence into macro instructions in order to reduce the size of programs.

This is a provisional obviousness-type double patenting rejection.

Claim Rejections - 35 USC § 103

18. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

19. Claims 1, 3-8 and 22-35 are rejected under 35 U.S.C. 103(a) as being unpatentable over Clausen et al., “Java Bytecode Compression for Low-End Embedded Systems”, 2000 (hereinafter Clausen) in view of Cirne (U.S. 6,260,187).

Per Claim 1 (Amended):

Clausen teaches receiving a first sequence of bytecodes to be executed by said virtual machine; selecting, at load time, a first-reduced instruction from a reduced set of virtual machine instructions, wherein said first-reduced instruction represents two or more different virtual machine instructions in said first sequences; translating, at load time, said two or more different virtual machine instructions in said first sequence into said first-reduced instruction from said reduced set of virtual machine instructions (pg. 476, par. 1, line 1 to par. 2, line 6, and see Figure 4); generating after said translating, a second sequence of bytecodes that includes said first-reduced instruction, thereby representing said first sequence of bytecodes with a second sequence which includes at least one instruction from said reduced set of virtual machine instruction that replaces said two or more different virtual machine instructions in said first sequence; determining, at load time, whether said second sequence of bytecodes includes a Getfield instruction immediately followed by an Astore instruction; generating, at load time, a macro instruction that represents said Getfield instruction and said Astore instruction that immediately follows said Getfield instruction (pg. 477, par. 1, line 1 to par. 2, line 3; see the getfield macro in Figure 4); loading in said virtual machine prior to execution time, said macro instruction instead of said Getfield instruction and said Astore instruction; and executing said macro instruction to store a value into a local variable (pg. 476, par. 2, line 1 to par. 3, line 6). Clausen does not explicitly teach that the second sequence of bytecodes includes an instantiation instruction immediately followed by a duplicate stack instruction.

Cirne teaches that the second sequence of bytecodes includes an instantiation instruction immediately followed by a duplicate stack instruction (“new ... dup” in column 14, lines 31-32), where “new” and “dup” are conventional Java Bytecode instructions which typically appear in sequence in order to instantiate a Java object as pointed out by the applicant in the specification, pg. 13, par. 37.

It would have been obvious to one having ordinary skill in the computer art at the time of the invention was made to modify the method disclosed by Clausen to include that the second sequence of bytecodes includes an instantiation instruction immediately followed by a duplicate stack instruction using the teaching of Cirne. The modification would be obvious because one of ordinary skill in the art would be motivated to factorize repeated instruction sequence into macro instructions in order to reduce the size of programs (Clausen, pg. 471, par. 2, line 1 to pg. 472, par. 4, line 5).

Per Claim 3 (Amended):

The rejection of claim 1 is incorporated, and Clausen further teaches wherein said Java macro instruction is generated during a bytecode verification phase (pg. 479, par. 2, line 1 to par. 4, line 6).

Per Claim 4 (Amended):

The rejection of claim 1 is incorporated, and Clausen further teaches wherein said virtual machine internally represents instructions as a pair of streams (pg. 479, par. 2, line 1 to par. 4, line 6).

Per Claim 5 (Amended):

The rejection of claim 4 is incorporated, and Clausen further teaches wherein said pair of streams includes a code stream and a data stream, wherein said code stream is suitable for containing a code portion of said macro instruction, and wherein said data stream is suitable for containing data (pg. 479, par. 2, line 1 to par. 4, line 6).

Per Claim 6 (Amended):

The rejection of claim 5 is incorporated, and Clausen further teaches wherein said macro instruction is generated only when said virtual machine determines that said macro instruction should be generated ("Macros are generated greedily by selecting the occurrence group that gives most savings first and continuing" in pg. 478, par. 2, line 1 to par. 4, line 8).

Per Claim 7 (Amended):

The rejection of claim 6 is incorporated, and Clausen further teaches wherein said determination of whether said macro instruction should be generated is made based on a predetermined criteria ("repetitive instruction sequences are identified as patterns" in pg. 477, par. 3, line 1 to par. 5, line 8; "Macros are generated greedily by selecting the occurrence group that gives most savings first and continuing" in pg. 478, par. 2, line 1 to par. 4, line 8).

Per Claim 8 (Amended):

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The rejection of claim 7 is incorporated, and the combination of Clausen and Cirne further teaches wherein said predetermined criteria is whether an instantiation instruction is immediately followed by a duplicate stack instruction more than a predetermined number of times (See Clausen, "repetitive instruction sequences are identified as patterns" in pg. 477, par. 3, line 1 to par. 5, line 8; "Macros are generated greedily by selecting the occurrence group that gives most savings first and continuing" in pg. 478, par. 2, line 1 to par. 4, line 8; and See Cirne, "new ... dup" in column 14, lines 31-32).

Per Claims 22-28 (New):

These are computer system versions of the claimed method discussed above (claims 1 and 3-8, respectively), wherein all claim limitations also have been addressed and/or covered in cited areas as set forth above. Thus, accordingly, these claims are also obvious.

Per Claims 29-35 (New):

These are computer readable medium versions of the claimed method discussed above (claims 1 and 3-8, respectively), wherein all claim limitations also have been addressed and/or covered in cited areas as set forth above. Thus, accordingly, these claims are also obvious.

Response to Arguments

20. Applicant's arguments with respect to claims 1, 3-8 and 22-35 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

21. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

22. Any inquiry concerning this communication from the examiner should be directed to Qamrun Nahar whose telephone number is (571) 272-3730. The examiner can normally be reached on Mondays through Fridays from 9:30 AM to 6:00 PM.

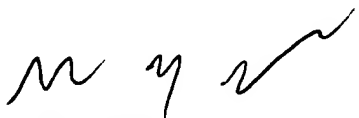
If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Tuan Q. Dam, can be reached on (571) 272-3695. The fax phone number for the organization where this application or processing is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the TC 2100 Group receptionist whose telephone number is 571-272-2100.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

QN
June 7, 2005



WEI Y. ZHEN
PRIMARY EXAMINER